

### FEATURES

- Dual Device Module
- Electrically Isolated Package
- Pressure Contact Construction
- International Standard Footprint
- Alumina (non-toxic) Isolation Medium

### APPLICATIONS

- Rectifier Bridges
- DC Power Bridges
- Plating Rectifiers
- Traction Systems

### VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages $V_{RRM}$	Conditions
MP03/260-16	1600	$T_{vj} = 150^{\circ}\text{C}$ $I_{RM} = 30\text{mA}$ $V_{RSM} = V_{RRM} + 100\text{V}$
MP03/260-14	1400	
MP03/260-12	1200	
MP03/260-10	1000	

Lower voltage grades available. For full description of part numbers see "Ordering instructions" on page 3.

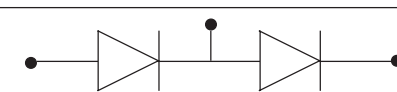
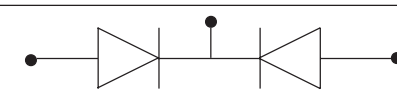
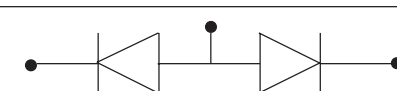
### CURRENT RATINGS - PER ARM

Symbol	Parameter	Conditions	Max.	Units	
$I_{F(AV)}$	Mean forward current	Halfwave, resistive load	$T_{case} = 75^{\circ}\text{C}$	267	A
			$T_{case} = 85^{\circ}\text{C}$	240	A
			$T_{heatsink} = 75^{\circ}\text{C}$	235	A
			$T_{heatsink} = 85^{\circ}\text{C}$	211	A
$I_{F(RMS)}$	RMS value	$T_{case} = 75^{\circ}\text{C}$	420	A	

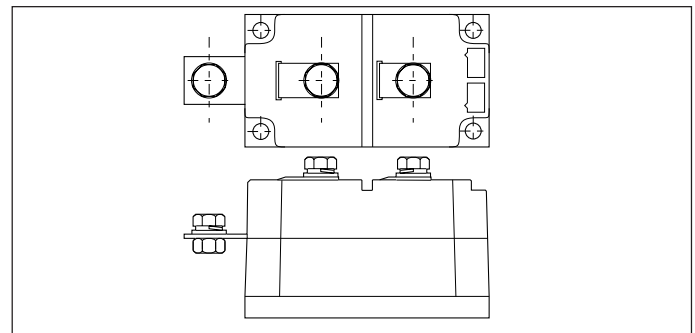
### KEY PARAMETERS

$V_{RRM}$	1600V
$I_{FSM}$	8100A
$I_{F(AV)}$ (per arm)	267A
$V_{isol}$	2500V

### CIRCUIT OPTIONS

Code	Circuit
HB	
G	
GN	

### PACKAGE OUTLINE



Module outline type code: MP03.  
See Package Details for further information.

## MP03 XX 260 Series

### SURGE RATINGS - PER ARM

Symbol	Parameter	Conditions	Max.	Units	
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_j = 150^\circ\text{C}$	$V_R = 0$	8100	A
			$V_R = 50\% V_{RRM}$	6500	A
$I^2t$	$I^2t$ for fusing	10ms half sine; $T_j = 150^\circ\text{C}$	$V_R = 0$	328000	$\text{A}^2\text{s}$
			$V_R = 50\% V_{RRM}$	211000	$\text{A}^2\text{s}$

### THERMAL & MECHANICAL RATINGS

Symbol	Parameter	Conditions	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case per Diode	dc	0.21	$^\circ\text{C}/\text{W}$
		halfwave	0.22	$^\circ\text{C}/\text{W}$
		3 phase	0.23	$^\circ\text{C}/\text{W}$
$R_{th(c-hs)}$	Thermal resistance - case to heatsink per Diode	Mounting torque = 5Nm with mounting compound	0.05	$^\circ\text{C}/\text{W}$
$T_{vj}$	Virtual junction temperature		150	$^\circ\text{C}$
$T_{sto}$	Storage temperature range		-40 to 150	$^\circ\text{C}$
$V_{isol}$	Isolation voltage	Commoned terminals to base plate AC RMS, 1min, 50Hz	2.5	kV

### CHARACTERISTICS

Symbol	Parameter	Conditions	Max.	Units
$V_{FM}$	Forward voltage	At 600A, $T_{case} = 25^\circ\text{C}$	1.3	V
$I_{RM}$	Peak reverse current	At $V_{RRM}$ , $T_j = 150^\circ\text{C}$	30	mA
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^\circ\text{C}$	0.84	V
$r_T$	On-state slope resistance	At $T_{vj} = 150^\circ\text{C}$	0.667	$\text{m}\Omega$

## ORDERING INSTRUCTIONS

Part number is made up as follows:

MP03 HB 260 - 16

MP = Pressure contact module  
03 = Outline type  
HB = Circuit configuration code (see "circuit options" - front page)  
260 = Nominal average current rating at  $T_{\text{case}} = 75^{\circ}\text{C}$   
16 =  $V_{\text{RRM}}/100$

Examples:

MP03 HB260-10  
MP03 G260-14  
MP023GN260-12

Note: Preferred type is HB configuration. G & GN types are available for specific applications, only when requested.

## MOUNTING RECOMMENDATIONS

- Adequate heatsinking is required to maintain the base temperature at  $75^{\circ}\text{C}$  if full rated current is to be achieved. Power dissipation may be calculated by use of  $V_{\text{TO}}$  and  $r_{\text{T}}$  information in accordance with standard formulae. We can provide assistance with calculations or choice of heatsink if required.
- The heatsink surface must be smooth and flat; a surface finish of N6 ( $32\mu\text{in}$ ) and a flatness within  $0.05\text{mm}$  ( $0.002''$ ) are recommended.
- Immediately prior to mounting, the heatsink surface should be lightly scrubbed with fine emery, Scotch Brite or a mild chemical etchant and then cleaned with a solvent to remove oxide build up and foreign material. Care should be taken to ensure no foreign particles remain.
- An even coating of thermal compound (eg. Unial) should be applied to both the heatsink and module mounting surfaces. This should ideally be  $0.05\text{mm}$  ( $0.002''$ ) per surface to ensure optimum thermal performance.
- After application of thermal compound, place the module squarely over the mounting holes, (or 'T' slots) in the heatsink. Using a torque wrench, slowly tighten the recommended fixing bolts at each end, rotating each in turn no more than  $1/4$  of a revolution at a time. Continue until the required torque of  $5\text{Nm}$  ( $44\text{lb.ins}$ ) is reached at both ends.
- It is not acceptable to fully tighten one fixing bolt before starting to tighten the others. Such action may DAMAGE the module.

CURVES

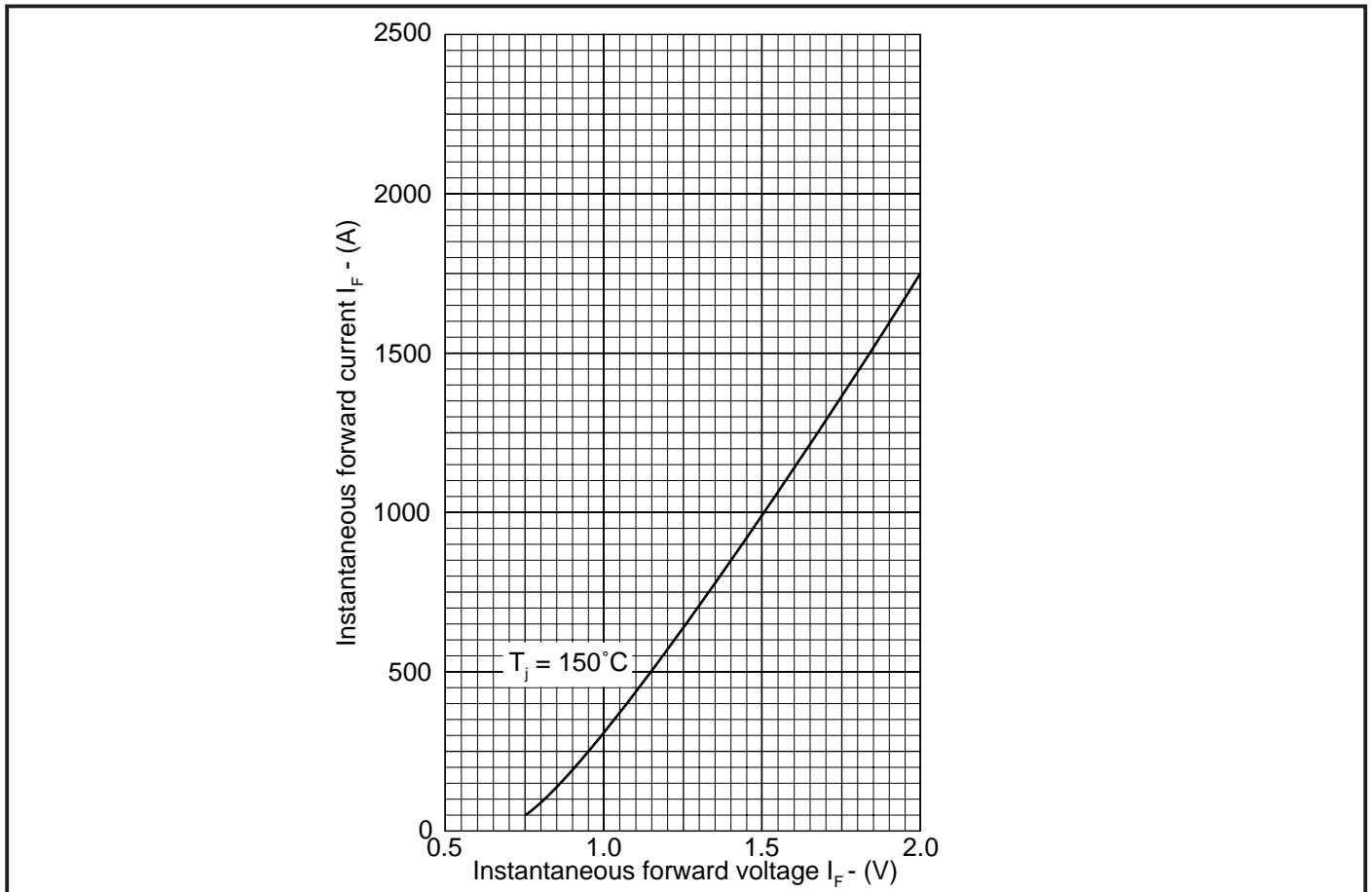


Fig. 1 Maximum (limit) forward characteristics (Per diode)

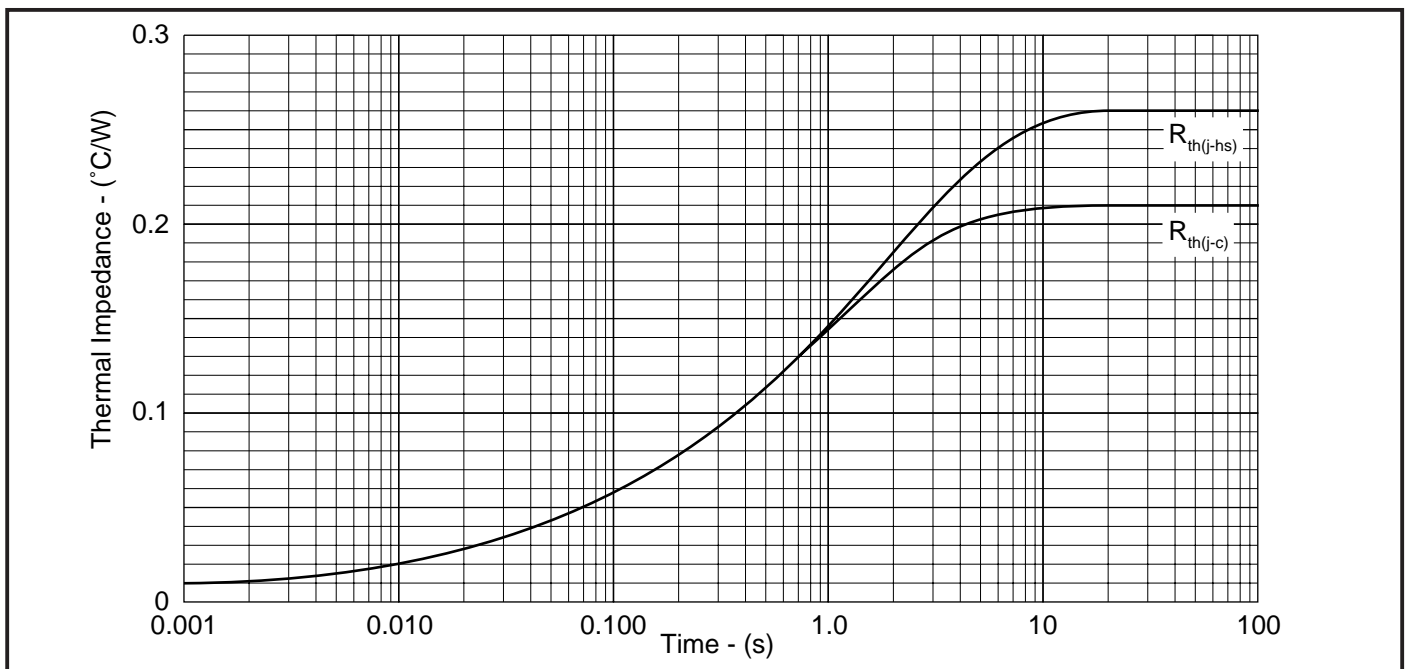


Fig. 2 Transient thermal impedance (DC) - (Per diode)

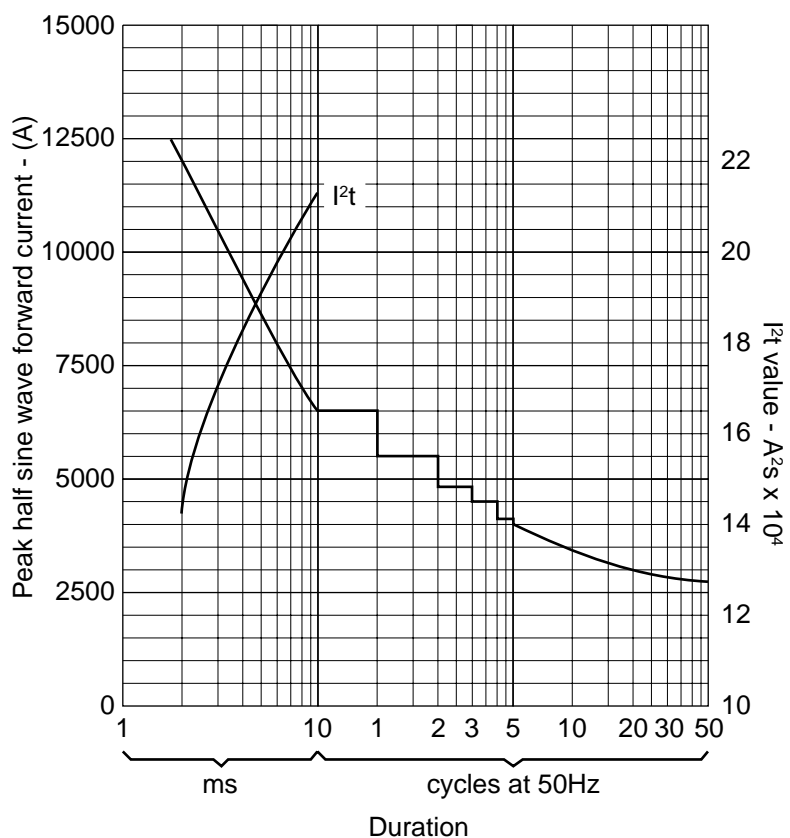
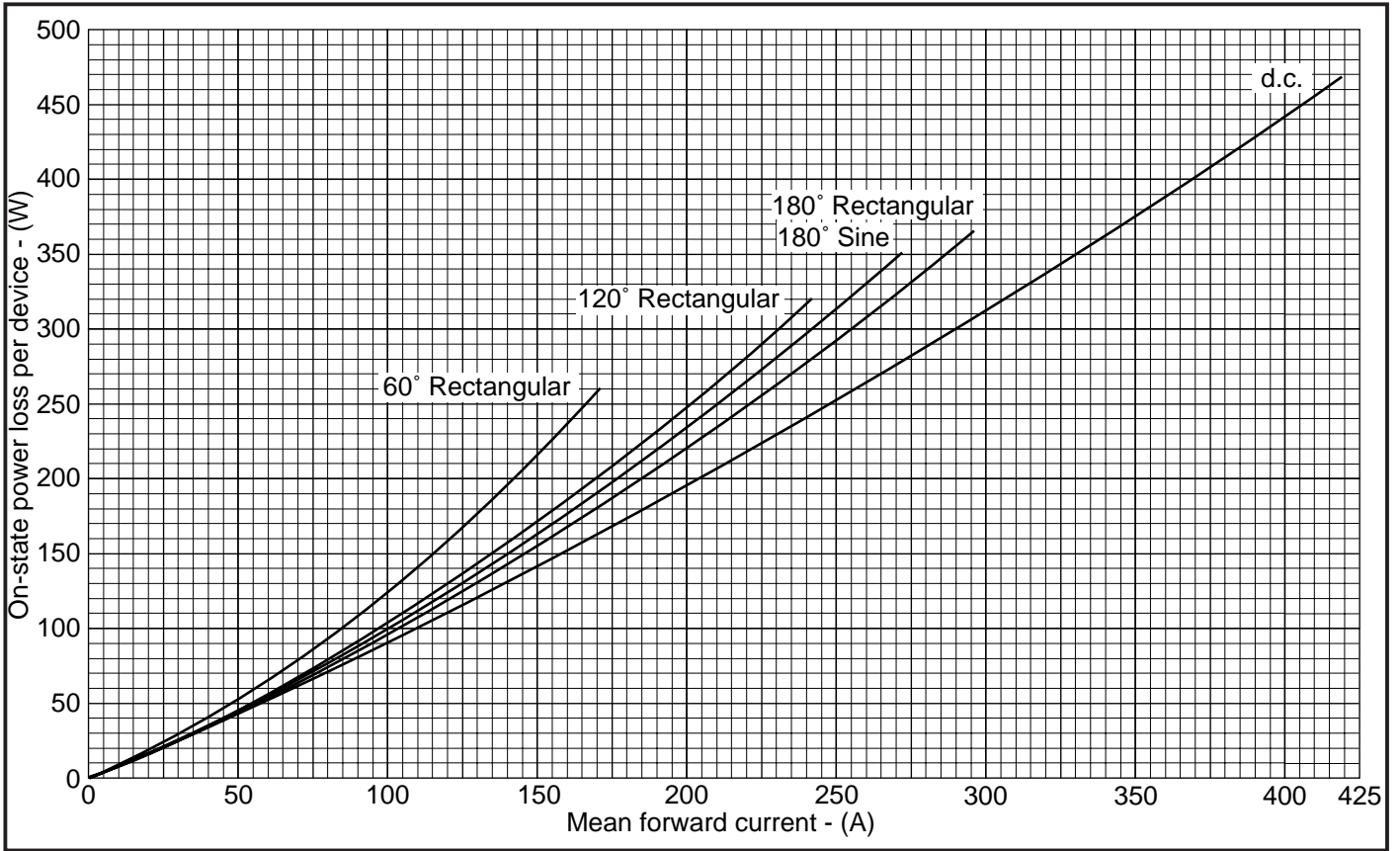
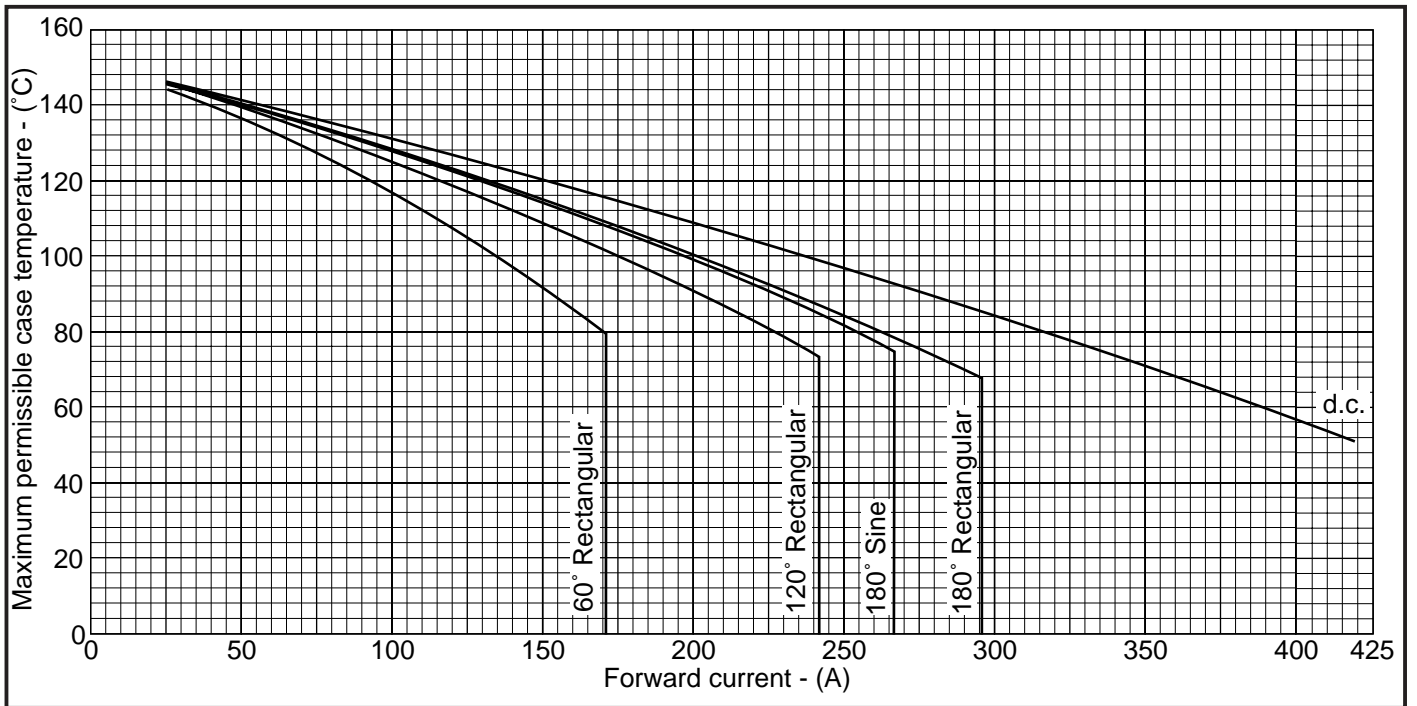


Fig. 3 Surge (non-repetitive) forward current vs time (with 0%  $V_{RRM}$ ,  $T_{case} = 150^\circ C$ )

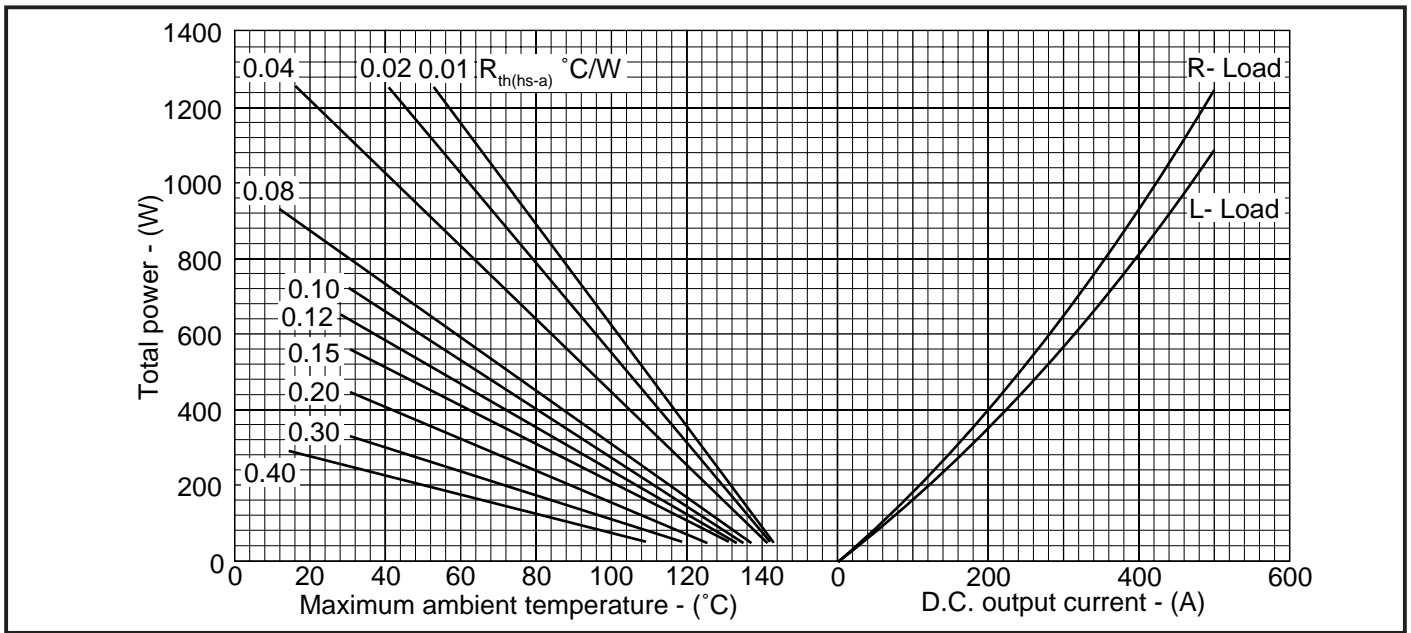
**MP03 XX 260 Series**



**Fig. 4 On-state power loss per arm vs forward current at various conduction angles, 50/60Hz**

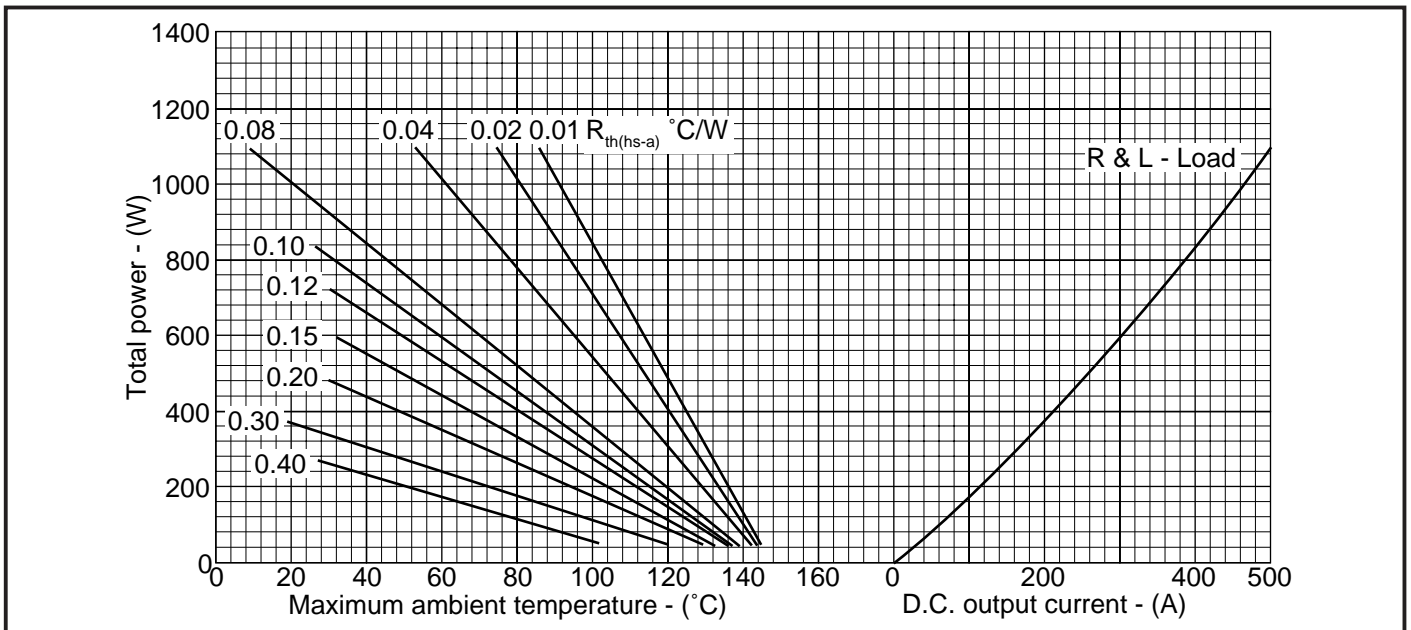


**Fig. 5 Maximum permissible case temperature vs forward current per arm at various conduction angles, 50/60Hz**



**Fig. 6 50/60Hz single phase bridge dc output current vs power loss and maximum permissible ambient temperature for various values of heatsink thermal resistance.**

(Note:  $R_{th(hs-a)}$  values given above are true heatsink thermal resistances to ambient and already account for  $R_{th(c-hs)}$  module contact thermal).



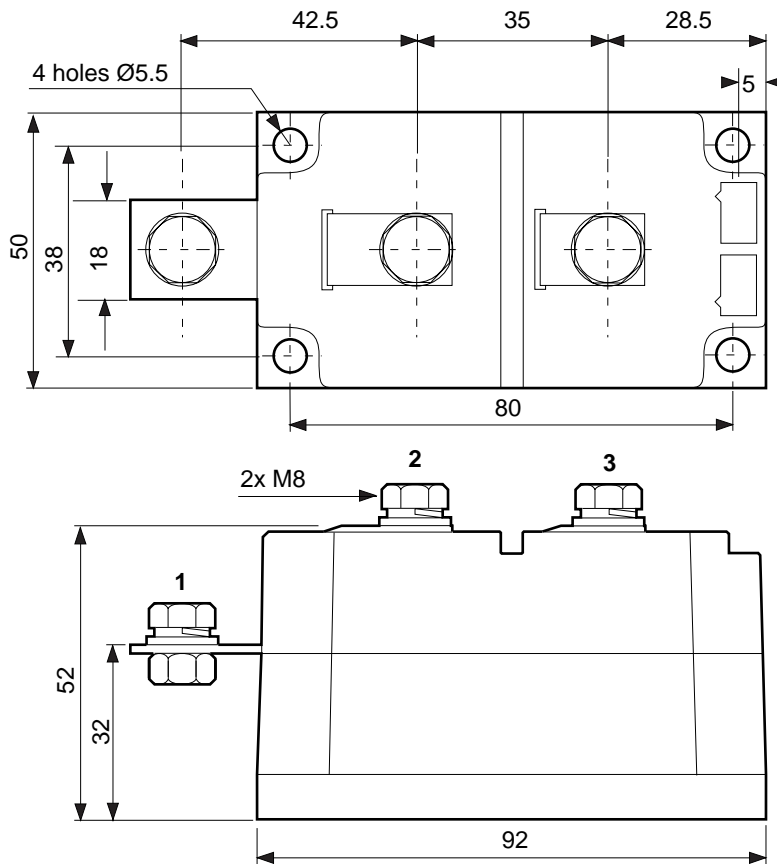
**Fig. 7 50/60Hz 3-phase bridge dc output current vs power loss and maximum permissible ambient temperature for various values of heatsink thermal resistance.**

(Note:  $R_{th(hs-a)}$  values given above are true heatsink thermal resistances to ambient and already account for  $R_{th(c-hs)}$  module contact thermal).

## MP03 XX 260 Series

### PACKAGE DETAILS

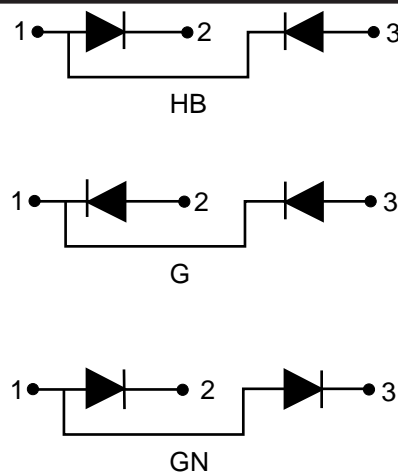
For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Recommended fixings for mounting: M5 socket head cap screws.  
Recommended mounting torque: 5Nm (44lb.ins)  
Recommended torque for electrical connections: 8Nm (70lb.ins)  
Maximum torque for electrical connections: 9Nm (80lb.ins)  
Nominal weight: 950g

**Module outline type code: MP03**

### CIRCUIT CONFIGURATIONS







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